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AF/3727

November 3, 2003

Mail Stop Appeal Brief - Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RE: U.S. Patent Appln. of Igor Palley et al.
Serial No.: 08/717,042; Filed September 20, 1996
"BLAST RESISTANT AND BLAST DIRECTING CONTAINER ASSEMBLIES"
PD File: 30-3744CIP1

Dear Sir:

Enclosed in triplicate is a Brief on Appeal, including three copies of the claims as they currently appear in the above-identified application.

The Commissioner is authorized to charge the Appeal Brief Filing fee of $330.00 to Deposit Account No. 01-1125. The Commissioner is also authorized to charge $1,480.00 for a four (4) month extension fee for filing the Appeal Brief or any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 01-1125. A triplicate copy of this letter is enclosed.

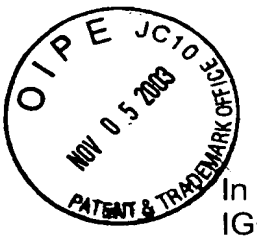
Respectfully,

Virginia Szigeti (Andrews)

Virginia Szigeti (Andrews)
Reg. No. 29,039
804-520-3651

Enclosures

#30
K. Cobb
11/18/03
1-3



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the application of:
IGOR PALLEY ET AL.

Docket:	30-3744CIP1		
Serial Number: 08/717,042	Group Art Unit:	3727	
Filed: September 20, 1996	Examiner:	Niki M. Eloshway	

For: BLAST RESISTANT AND BLAST DIRECTING CONTAINER ASSEMBLIES

Colonial Heights, VA 23834
November 3, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

BRIEF ON APPEAL

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated November 4, 2002, and finally rejecting claims 1, 3-11, 13-47 and 51-53. A Notice of Appeal was filed on May 1, 2003. The Commissioner is authorized to charge the Appeal Brief Filing Fee [37 CFR §1.17(c)] of $330.00 to Deposit Account No. 01-1125. The Commissioner is authorized to charge $1,480.00 for a four (4) month extension fee [37 CFR § 1.17(a)(4)] for filing this Notice of Appeal or any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 01-1125.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest is Honeywell International Inc., successor in interest to AlliedSignal Inc., who is the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

There are no other related applications on appeal or subject to an interference that are known to appellant, appellant's legal representative or the assignee that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal. The parent of the present application, USSN 08/533,589, filed September 25, 1995, has claims (numbered 1-6 and 8-36) allowed and has claims (numbered 37-38, 42-57, 74-76) under final rejection by the same Examiner, Niki M. Eloshway.

III. STATUS OF CLAIMS

Claims 1, 3-11, 13-47 and 51-53 are presented on appeal. These claims have been finally rejected in the Office Action identified above. A copy of the claims is reproduced in the Appendix (Section IX).

Claim 2 has been canceled. Claims 12, 48-50 and 54-66 have been withdrawn from consideration by the Examiner as directed to a non-elected species. No claims are allowed.

IV. STATUS OF ALL AMENDMENTS FILED SUBSEQUENT TO FINAL REJECTION

There have been no amendments filed subsequent to the issuance of the Final Rejection mailed November 4, 2002.

V. SUMMARY OF THE INVENTION

The invention is a blast resistant container assembly and a blast directing container assembly, each of which comprises a container with blast mitigating material, preferably an aqueous foam, more preferably an aqueous foam having a density in the range of from about 0.01 to about 0.10 g/cm^3, located therein. Some of the containers are collapsible. In one embodiment, the container comprises a plurality of faces that are connected at a common edge with fibrous material functioning as a hinge between the faces. In an alternate embodiment,

the container is formed by a plurality of bands of specific orientation, at least one of which is formed of a blast resistant material. In the blast-directing embodiment, the container assembly includes at least one closed band comprised of high strength fibers, at least about 50 weight percent of which comprise continuous lengths in the direction of the band. These container assemblies in combination with blast mitigating material located therein can withstand tremendous pressures and resist pulling apart after an explosion within the container assembly.

VI. ISSUES

The issues in this appeal are:

A. whether claims 1, 3-6, 8, 20-28, 30, 47, 51 and 52 are unpatentable under 35 U.S.C. §103(a) over Sacks (USP 5,249,534) in view of MacDonald et al. (USP 3,822,807);

B. whether claims 10-11, 13-19, 33-43 and 45 are unpatentable under 35 U.S.C.§103(a) over Sacks in view of MacDonald et al. and Lewis (USP 674,009);

C. whether claims 1, 3-4, 7, 9, 20, 23, 27, 29, 31, 47 and 53 are unpatentable under 35 U.S.C.§103(a) over Sacks in view of Gettle et al. (USP 5,225,622); and

D. whether claims 32-33, 35, 38, 42, 44 and 46 are unpatentable under 35 U.S.C.§103(a) over Sacks in view of Gettle et al. and Lewis.

VII. GROUPING OF CLAIMS

Claims 1, 3-6, 8, 20-28, 30, 47, 51 and 52 are grouped together by the Examiner. Appellants respectfully submit that these claims, as a whole, do not stand or fall together. Specifically, claims 47, 51 and 52 should not be grouped with the balance of these claims since they are directed to independent, but related, inventions.

Claims 10-11, 13-19, 33-43 and 45 are also grouped together by the Examiner. Appellants respectfully submit that claims 35-43 and 45 should not be grouped with the balance of these claims since they are directed to an independent, but related, invention, i.e., these claims as a whole, do not stand or fall together.

Claims 1, 3-4, 7, 9, 20, 23, 27, 29, 31, 47 and 53 also are grouped together by the Examiner. Appellants respectfully submit that claims 47 and 53 should not be grouped with the balance of these claims since they are directed to an independent, but related, invention, i.e., these claims as a whole, do not stand or fall together.

Claims 32-33, 35, 38, 42, 44 and 46 are grouped together by the Examiner. Again, Appellants respectfully submit that these claims as a whole, do not stand or fall together, since claims 32 is directed to an independent, but related, invention with respect to the balance of the claims.

VIII. ARGUMENTS

With reference to the claims groupings, there are four instances where the Examiner has grouped independent claims together. Claims 1 and 47 are grouped for rejection, as in Sections VI.A and VI.C; claims 10 and 33 are grouped for rejection, as in Section VI.B; and claims 32 and 33 are grouped for rejection, as in Section VI.D. In the rejections under all Sections, dependent claims are grouped that are distinct.

With reference to claims 1, 10, 32 and 33, the container assembly of each of claims 1 and 32 is both collapsible for storage when empty and comprises fibrous material connecting container faces, whereas the container assembly of claim 10 requires collapsible bands without specifying fibrous material, and the container assembly of claim 33 has neither limitation. It is submitted that these claims and those dependent therefrom should therefore be considered independently.

A. Are claims 1, 3-6, 8, 20-28, 30, 47, 51 and 52 unpatentable under 35 U.S.C. §103(a) over Sacks (USP 5,249,534) in view of MacDonald et al. (USP 3,822,807)?

The references, alone or together, neither teach nor suggest the blast resistant container assembly of claims 1, 3-6, 8, 20-28, 30, 47, 51 and 52, for the reasons that follow.

It is the Examiner's position that Sacks discloses the claimed invention except for the blast mitigating material AND except for the strips of material forming bands. This is not so. The blast resistant container assembly of Appellants' claims 1, 3-6, 8, 20-28, and 30 all comprise a collapsible container

formed of blast resistant material, and blast mitigating material. Sacks fails to teach a collapsible container or a container of blast resistant material; rather, Sacks teaches a protective cover for a standard, non-collapsible container. Reference to Sacks will show that it is the container cover that is made from one or more layers of high tensile strength, high stretch resistant flexible material. See column 1, lines 25-32. In column 3, beginning at line 30, Sacks describes its container as follows:

> The container 1 consists of a rigid base 2 with a floor 3 to support luggage, a frame 4 of tubular aluminium (sic) that extends along the edges of the container, and a number of aluminium (sic) panels 5 that are riveted to the frame 4 to close the sides of the container except for one or an opposite pair of sides which are formed with an opening 6 to load or unload luggage. A suspended plastic curtain 7 is provided to close each opening 6 against the weather.

There is absolutely nothing to suggest, therefore, that the container of Sacks is or should be made from blast resistant material; in fact, Sacks teaches away from this concept by suggesting use of aluminum, a material recognized by Appellants on page 1 of their specification as typical for cargo containers in the prior art.

With respect to Appellants' claim 21, Sacks fails to teach or suggest that at least about 75 weight percent of the fibers (used in the cover, not the container) should be substantially continuous lengths of fiber that encircle anything, much less an enclosed volume. See Appellants' Examples 6 and 9. Further with respect to Appellants' claims 22 and 24, Sacks fails to teach or suggest that substantially all of the fibers are continuous lengths of fiber that encircle the enclosed volume. See Appellants' Example 15. Sacks does, however, teach the use of woven and non-woven fabric supplied under the SPECTRA® and SPECTRA SHIELD® trademarks for its cover. At the time of the Sacks invention, the SPECTRA SHIELD® material would have been characterized by a maximum of 50 percent of its continuous fiber lengths running in one direction – the balance would have been at approximately a 90° angle to the direction of these fiber lengths. Woven SPECTRA® fiber would have been similarly characterized. As such, Sacks actually teaches away from Appellants' invention of claims 21, 22 and 24.

MacDonald et al. fails to supply the deficiencies of Sacks. There is nothing in MacDonald et al. that teaches or suggests the collapsible container of blast resistant material claimed by Appellants; rather, MacDonald et al. teaches

the use of reticulated foam balls as explosion suppressing means in ullage-containing containers. This, in and of itself, will not make the standard container disclosed by Sacks effective to withstand a blast. In this regard note Appellants' Examples 11-16 and accompanying discussion. Example 11 shows that aqueous foam not only mitigates blast, but also prevents fire. Examples 12-16 show that the aqueous foams (blast mitigating material) play a critically important role in providing blast protection, providing protection against explosive charges weighing two to four times that which can be contained without foam. Furthermore, there is nothing in McDonald et al. that teaches or suggests the collapsible container of blast resistant material claimed by Appellants in claims 1, 3-6, 8, 20-28, 30 and 51, nor the fibrous material also claimed therein. It is respectfully submitted, therefore, that MacDonald et al. is no more relevant than the art cited by Appellants in the paragraph bridging pages 2 and 3 of the specification.

Claims 47, 51 and 52 are all directed to a blast directing container assembly. As such, there are two open sides. Sacks teaches a cover for a container assembly. This cover leaves only one side open. This deficiency is not met by McDonald et al.

B. Are claims 10-11, 13-19, 33-43 and 45 unpatentable under 35 U.S.C.§103(a) over Sacks in view of MacDonald et al. and Lewis (USP 674,009)?

The references, alone or together, neither teach nor suggest the blast resistant container assembly of claims 10-11, 13-19, 33-43 and 45, for the reasons that follow.

The prior discussion with respect to Sacks and MacDonald et al. is incorporated here. Furthermore, the container of Appellants' claims 10-11, 13, 33-43 and 45 all require the presence of a plurality of bands, oriented relative to one another so as to substantially enclose a volume, and with each edge of the container being covered by at least one of the bands. "Band" is defined on page 9, lines 10-11, as "a thin, flat, volume-encircling strip." The panels of material described by Sacks at col. 1, lines 65-68, and col. 1, line 68, to col. 2, line 4, are not "bands" as .defined by Appellants since they are U-shaped panels that fail to encircle anything individually. In fact, Sacks teaches use of these panels in forming a cover for a container, and there is no coverage for the container's base.

As such, the Sacks' panels also fail to substantially enclose a volume, as required by Appellants' claims.

Neither Sacks nor MacDonald et al. teaches Appellants' bands. This deficiency is not met by Lewis. Lewis cannot and does not address blast resistance. With reference to the drawing figures of Lewis, especially Figures 1 and 2, it will be seen that the Lewis container/box edge at "a" is not covered by one of its "bands". Rather, a hinging strip or tape is used to join the edge created by the abutting panels of the "A" casing. This taped edge fatally flaws the design insofar as blast resistance is concerned and thus, teaches away from Appellants' invention.

It is respectfully submitted that Appellants' claims 10 and 33, as amended, and all claims dependent therefrom, are patentably distinct from these references, alone or in combination.

C. Are claims 1, 3-4, 7, 9, 20, 23, 27, 29, 31, 47 and 53 unpatentable under 35 U.S.C.§103(a) over Sacks in view of Gettle et al. (USP 5,225,622?

The references, alone or together, neither teach nor suggest the blast resistant container assembly of claims 1, 3-4, 7, 9, 20, 23, 27, 29, 31, 47 and 53 for the reasons that follow.

The prior discussions with respect to Sacks are incorporated here. Gettle et al. teaches the use of aqueous foams as a pressure attenuation medium for shock waves in a porous container. There is nothing in Gettle et al., however, that teaches or suggests the collapsible container of blast resistant material claimed by Appellants. In this regard, again note Appellants' Examples 11-16 and accompanying discussion. Example 11 shows that aqueous foam not only mitigates blast, but also prevents fire. Examples 12-16 show that the aqueous foams (blast mitigating material) play a critically important role in providing blast protection, providing protection against explosive charges weighing two to four time that of what can be contained without foam.

D. Are whether claims 32-33, 35, 38, 42, 44 and 46 unpatentable under 35 U.S.C.§103(a) over Sacks in view of Gettle et al. and Lewis?

The references, alone or together, neither teach nor suggest the blast resistant container assembly of claims 32-33, 35, 38, 42, 44 and 46 for the reasons set forth below.

The prior discussions with respect to Sacks, Gettle et al. and Lewis are incorporated here. The Examiner suggests that the container of Sacks, modified in accordance with Gettle et al., discloses the claimed invention except for the first and second bands being tubes, and that Lewis supplies this deficiency. Appellants disagree. First, Sacks fails to disclose first and second bands, much less that these bands are tubes or that each edge of the container is covered by at least one of the bands. Gettle et al. fails to supply this deficiency. Lewis discloses that it is known in the art to construct a knockdown paper container from three separate paper bands. Lewis cannot and does not address blast resistance, for the reasons set forth previously in this response. There furthermore is absolutely no motivation to combine Lewis, which relates to knockdown paper containers, with Gettle et al. and Sacks. One of ordinary skill in the art would not look to turn of the Twentieth Century paper box technology for solutions to blast containment or resistance.

Appellants would note that the nature of the blasts/explosions that were tested with the claimed container assemblies were significant – the amounts of C4 and Trenchrite 5 utilized to test these containers (and establish C50 values) were lethal. Fiber content and orientation was demonstrated to vastly enhance ballistic performance – see Example 5 versus Example 6 wherein a fiber fraction increase of 50% resulted in a 50% increase in the C50 value. See In re Antonie, 195 USPQ 6 (CCPA 1977).

CONCLUSION

For the reasons stated, Appellants respectfully submit that the claims on appeal, i.e., claims 1, 3-11, 13-47 and 51-53, should be found allowable.

Respectfully submitted,
IGOR PALLEY ET AL.

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I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICES AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: MAIL STOP APPEAL BRIEF – PATENTS, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450

ON: November 3, 2003
DATE

Virginia Szigeti (Andrews)
NAME OF APPLICANT, ASSIGNEE OR APPLICANT'S ATTORNEY

Virginia Szigeti (Andrews)
SIGNATURE

November 3, 2003
DATE

IX. APPENDIX - CLAIMS

1. A blast resistant container assembly for receiving an explosive, said container assembly comprising:

a. a container of blast resistant material, said container being collapsible for storage when empty and comprising a plurality of faces, each face being connected to another face at at least one common edge with a fibrous material, said fibrous material functioning as a hinge between said faces; and

b. blast mitigating material located within the container.

3. The container assembly of claim 1 wherein the fibrous material comprises at least one fibrous layer, said fibrous layer comprising at least one network of high strength fibers having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

4. The container assembly of claim 3 wherein at least about 50 weight percent of said fibers are substantially continuous, parallel lengths of fiber substantially perpendicular to said edge.

5. The container assembly of claim 4 wherein the network of fibers is in a resin matrix.

6. The container assembly of claim 4 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

7. The container assembly of claim 4 wherein said blast mitigating material comprises an aqueous foam.

8. The container assembly of claim 1 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

9. The container assembly of claim 1 wherein said blast mitigating material comprises an aqueous foam.

10. A blast resistant container assembly for receiving an explosive, said container assembly comprising:

a. a container comprising a plurality of bands which are oriented relative to one another when assembled to substantially enclose a volume and to form a container wall, each edge of the container being covered by at least one of said bands, said bands being collapsible for storage when disassembled, at least one of said bands comprising blast resistant material; and

b. blast mitigating material located within the container.

11. The container assembly of claim 10 wherein said bands are at least three in number and comprise a first inner band nested within a second band which is nested within a third band, said bands forming a container wall having a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands.

13. The container assembly of claim 11 wherein said first inner band includes a foldable flap on each side thereof.

14. The container assembly of claim 11 wherein each of said first, second, and third bands is a tube having a longitudinal axis, and wherein the longitudinal axes of said first, second, and third bands are substantially perpendicular to one another.

15. The container assembly of claim 11 wherein each of said bands comprises a plurality of faces, each face being connected to another face at at least one common edge with a fibrous material, said fibrous material functioning as a hinge between said faces.

16. The container assembly of claim 15 wherein the fibrous material comprises at least one fibrous layer, said fibrous layer comprising at least one network of high strength fibers having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

17. The container assembly of claim 16 wherein at least about 50 weight percent of said fibers are substantially continuous, parallel lengths of fiber perpendicular to said edge.

18. The container assembly of claim 17 wherein the network of fibers is in a resin matrix.

19. The container assembly of claim 15 wherein the faces of at least one band are rigid.

20. The container assembly of claim 1 wherein the blast resistant material comprises at least one fibrous layer, said fibrous layer comprising at least one network of fibers, at least about 50 weight percent of said fibers being substantially continuous lengths of fiber that encircle the enclosed volume.

21. The container assembly of claim 20 wherein at least about 75 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume.

22. The container assembly of claim 20 wherein substantially all of the fibers are continuous lengths of fiber that encircle the enclosed volume.

23. The container assembly of claim 20 wherein the fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

24. The container assembly of claim 22 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

25. The container assembly of claim 23 wherein said fibers are polyolefin fibers.

26. The container assembly of claim 23 wherein said fibers are aramid fibers.

27. The container assembly of claim 23 wherein the network of fibers is in a resin matrix.

28. The container assembly of claim 27 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

29. The container assembly of claim 27 wherein said blast mitigating material comprises an aqueous foam.

30. The container assembly of claim 23 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

31. The container assembly of claim 23 wherein said blast mitigating material comprises an aqueous foam.

32. A blast resistant container assembly for receiving an explosive, said container assembly comprising:

a. at least three seamless bands of a blast resistant material comprising high strength fibers having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d, said bands being nested one within the other when assembled with their longitudinal axes at right angles to one another to substantially enclose a volume and to form a container wall having a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands, each edge of the container being covered by at least one of said bands, said bands being collapsible for storage when disassembled; and

b. an aqueous foam located within the inner band and having a density in the range of from about 0.01 to about 0.10 g/cm^3.

33. A blast resistant container assembly for receiving an explosive, said container assembly comprising:

a. at least three bands of material, a first inner band being nested within a second band which is nested within a third band, said bands being oriented relative to one another to substantially enclose a volume and to form a container wall having a thickness substantially equivalent to the sum of the thicknesses of at least two of the bands, each edge of the container being covered by at least one of said bands; and

b. blast mitigating material located within the inner band.

34. The container assembly of claim 33 wherein each of said first, second, and third bands is a tube having a longitudinal axis, and wherein the longitudinal axes of said first, second, and third bands are substantially perpendicular to one another.

35. The container assembly of claim 33 wherein at least one of the bands comprises at least one fibrous layer, said fibrous layer comprising at least one network of fibers, at least about 50 weight percent of said fibers being substantially continuous lengths of fiber that encircle the enclosed volume.

36. The container assembly of claim 35 wherein at least about 75 weight percent of said fibers are substantially continuous lengths of fiber that encircle the enclosed volume.

37. The container assembly of claim 35 wherein substantially all of the fibers are continuous lengths of fiber that encircle the enclosed volume.

38. The container assembly of claim 35 wherein the fiber comprises a high strength fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d.

39. The container assembly of claim 38 wherein said high strength fibers are selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

40. The container assembly of claim 38 wherein said fibers are polyolefin fibers.

41. The container assembly of claim 38 wherein said fibers are aramid fibers.

42. The container assembly of claim 38 wherein the network of fibers is in a resin matrix.

43. The container assembly of claim 42 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

44. The container assembly of claim 42 wherein said blast mitigating material comprises an aqueous foam.

45. The container assembly of claim 33 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

46. The container assembly of claim 33 wherein said blast mitigating material comprises an aqueous foam.

47. A blast directing container assembly for receiving an explosive, said container assembly comprising:

a. at least one closed band of blast resistant material encircling a volume, said band having two open sides, said material comprising a network of high strength fibers, at least about 50 weight percent of said fibers comprising continuous lengths in the direction of the band; and

b. blast mitigating material located within the volume encircled by the band.

51. The container assembly of claim 47 wherein the band is collapsible for storage when empty.

52. The container assembly of claim 47 wherein said blast mitigating material is selected from the group consisting of polymeric foams, particulates, condensable gases, heat sink materials, foamed glass, microballoons, balloons, bladders, hollow spheres, wicking fibers, and combinations thereof.

53. The container assembly of claim 47 wherein said blast mitigating material comprises an aqueous foam.